

In the fourth enumerated paragraph of the statement of the rejection, the Examiner asserted that "mad" on page 21, line 4 of the specification should be changed to "made." In response, Applicants have amended the specification per Examiner's suggestion.

Claims 1 and 5 are rejected under 35 U.S.C. § 102(b) for lack of novelty as evidenced by Akira, JP 4-372133

In the fifth enumerated paragraph of the Office Action, the Examiner asserted that Akira discloses a semiconductor device corresponding to that claimed. This rejection is respectfully traversed.

The factual determination of lack of novelty under 35 U.S.C. § 102 requires the identical disclosure in a single reference of each element of a claimed invention, such that one having ordinary skill in the art would have recognized that the identically claimed invention is within the public domain. **ATD Corporation v. Lydall, Inc.**, 159 F.3d 534, 48 USPQ2d 1321 (Fed. Cir. 1998); **Electro Medical Systems S.A. v. Cooper Life Sciences, Inc.**, 34 F.3d 1048, 32 USPQ2d 1017 (Fed. Cir. 1994). Furthermore, the Examiner must also establish that the applied reference identically discloses each feature of the claimed invention. **In re Rijckaert**, 9 F.3d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993); **Lindermann Maschinenfabrik GMBH v. American Hoist & Derrick Co.**, 730 F.2d 1452, 221 USPQ 481 (Fed. Cir. 1984). As part of this analysis, the Examiner is burdened to (a) identify the elements of the claims, (b) determine the meaning of the elements in light of the specification and prosecution history, and (c) identify corresponding elements disclosed in the allegedly anticipating reference. **Lindermann Maschinenfabrik GMBH v. American Hoist & Derrick Co.**, supra. That burden has not been discharged.

Initially, Applicants note that the Examiner has failed to construe a meaning for the terms "hard mask" and "being resistant to heat." As a result, Applicants respectfully submit that the Examiner has misconstrued the teachings of Akira. On page three of the statement of the rejection, the Examiner asserted that reference numeral 4 of Akira discloses the claimed hard mask. Reference numeral 4, however, is used in Akira to refer to a photoresist (PR). The term "hard mask" has a very specific usage to those having ordinary skill in the art of semiconductor manufacturing, and describing a photoresist is not included as part of that specific usage. As such, Akira fails to disclose a hard mask.

The Examiner has also failed to construe the meaning of the term "being resistant to heat." Although the Examiner asserts that the photoresist 7 of Akira is resistant to heat, the Examiner has failed to establish where Akira makes any disclosure whatsoever as to the ability of the photoresist 7 to resist heat, and Applicants review of Akira yields no such disclosure. Therefore, the above argued differences between the semiconductor device defined in independent claim 5 and the device of Akira undermine the factual determination that Akira identically describes the claimed invention within the meaning of 35 U.S.C. § 102. **Minnesota Mining & Manufacturing Co. v. Johnson & Johnson Orthopaedics Inc.**, 976 F.2d 1559, 24 USPQ2d 1321 (Fed. Cir. 1992); **Kloster Speedsteel AB v. Crucible Inc.**, 793 F.2d 1565, 230 USPQ 81 (Fed. Cir. 1986). Applicants, therefore, respectfully submit that the imposed rejection of claims 1 and 5 under 35 U.S.C. § 102 for lack of novelty as evidenced by Akira is not factually viable and, hence, solicit withdrawal thereof.

Claims 1 and 5 are rejected under 35 U.S.C. § 102(b) for lack of novelty as evidenced by Yoshihiko, JP 2-264432

In the sixth enumerated paragraph of the Office Action, the Examiner asserted that Yoshihiko discloses a semiconductor device corresponding to that claimed. This rejection is respectfully traversed.

As with Akira, the Examiner has misconstrued Yoshihiko to teach a hard mask that is resistant to heat. Feature 14/15, which is asserted by the Examiner to allegedly disclose the claimed hard mask, is taught by Yoshihiko to be photoresist. As previously stated, a photoresist is not a hard mask. As such, Yoshihiko fails to identically describe the claimed invention within the meaning of 35 U.S.C. § 102. Thus, Applicants respectfully request the withdrawal of the rejection of claims 1 and 5 under 35 U.S.C. § 102 for lack of novelty as evidenced by Yoshihiko.

Claims 1 and 5 are rejected under 35 U.S.C. § 102(e) for lack of novelty as evidenced by Schoenfeld et al., U.S. Patent No. 6,396,727 (hereinafter Schoenfeld)

In the seventh enumerated paragraph of the Office Action, the Examiner asserted that Schoenfeld discloses a semiconductor device corresponding to that claimed. This rejection is respectfully traversed.

As with Akira and Yoshihiko, the Examiner has misconstrued Schoenfeld to teach a hard mask that is resistant to heat. Feature 18, which is asserted by the Examiner to allegedly disclose the claimed hard mask, is referred to by Schoenfeld as a mask. As such, Schoenfeld fails to identically describe a hard mask, as claimed, within the meaning of 35 U.S.C. § 102. Thus,

Applicants respectfully request the withdrawal of the rejection of claims 1 and 5 under 35 U.S.C. § 102 for lack of novelty as evidenced by Yoshihiko.

Claims 1 and 3 are rejected under 35 U.S.C. § 102(b) for lack of novelty as evidenced by Doan et al., U.S. Patent No. 5,346,587 (hereinafter Doan)

In the eighth enumerated paragraph of the Office Action, the Examiner asserted that Doan discloses a semiconductor device corresponding to that claimed. This rejection is respectfully traversed.

Applicants note that the Examiner's rejection of Doan is predicated upon an incorrect interpretation of the terms "wiring" and "hard mask." As is well known in the art of semiconductor fabrication, a wiring (or wiring layer) is distinguishable from a gate electrode. Furthermore, the disclosure of silicide (reference numeral 35 in Doan) would not be considered by one having ordinary skill in the art to be a disclosure of a hard mask. Thus, the gate electrodes 34 of Doan do not identically describe a wiring, as claimed, within the meaning of 35 U.S.C. § 102. Furthermore, the silicide 35 of Doan does not identically describe a hard mask, as claimed. As such, the features disclosed by Doan do not comport with the features recited in claim 1. Thus, Applicants respectfully request the withdrawal of the rejection of claims 1 and 3 under 35 U.S.C. § 102 for lack of novelty as evidenced by Doan.

Claims 2 and 3 are rejected under 35 U.S.C. § 103 for obviousness predicated upon Akira in view of Tao et al., U.S. Patent No. 6,399,515 (hereinafter Tao)

In the ninth enumerated paragraph of the statement of the rejection, the Examiner concluded that one having ordinary skill in the art would have been motivated to modify the semiconductor device of Akira in view of Tao to arrive at the claimed invention. This rejection is respectfully traversed.

Claims 2 and 3 depend ultimately from independent claim 1, and Applicants incorporate herein the arguments previously advanced in traversing the imposed rejection of claim 1 under 35 U.S.C. § 102 for lack of novelty as evidenced by Akira. Specifically, the photoresist of Akira does not disclose the claimed hard mask. The Examiner's rejection of claims 2 and 3 is predicated upon Akira teaching a hard mask. As such, the Examiner's rejection of claims 2 and 3 fails because the Examiner has not established a motivation to replace the photoresist of Akira with the hard mask of Tao.

In addition, the Examiner's purported motivation to combine Akira in view of Tao is legally insufficient. The Examiner has merely stated that it would have been obvious to replace the hard mask of Akira with Tao "because a silicon oxide film or a silicon nitride film is commonly used as the mask to etch the layer formed below it." The mere identification of claim features in disparate references does not establish the requisite realistic motivation to support the ultimate legal conclusion of obviousness under 35 U.S.C. § 103. **Grain Processing Corp. v. American-Maize Products Co.**, 840 F.2d 902, 5 USPQ2d 1788 (Fed. Cir. 1988). Moreover, a generalization does not establish the requisite motivation to modify a specific reference in a specific manner to arrive at a specifically claimed invention. **In re Deuel**, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995). Rather, a burden is imposed upon the Examiner to make "clear and particular" factual findings as

to any specific understanding or specific technological principle which would have realistically impelled one having ordinary skill in the art to modify the device disclosed by Akira to arrive at the claimed invention. **Ruiz v. A.B. Chance Co.**, 234 F.3d 654, 57 USPQ2d 1161 (Fed. Cir. 2000); **Ecolchem Inc. v. Southern California Edison, Co.**, 222 F.2d 973, 56 USPQ2d 1065 (Fed. Cir. 2000); **In re Kotzaab**, 217 F.3d 1365, 55 USPQ 1313 (Fed. Cir. 2000); **In re Dembiczak**, 175 F.2d 994, 50 USPQ2d 1614 (Fed. Cir. 1999). This burden has not been discharged.

It is also noted that the purported hard mask 38a, 38b of Tao is not used as an etch mask. In this regard, the Examiner is referred to Figs. 5 and 6, and the accompanying description, which shows that photoresist 40a, 40b is used as an etch mask for the layer 36 below features 38a, 38b. Applicants, therefore, respectfully submit that the imposed rejection of claims 2 and 3 under 35 U.S.C. § 103 for obviousness predicated upon Akira and Tao is not viable and, hence, solicit withdrawal thereof.

Claim 4 is rejected under 35 U.S.C. § 103 for obviousness predicated upon Akira in view of Williams, U.S. Patent No. 6,087,269

In the tenth enumerated paragraph of the statement of the rejection, the Examiner concluded that one having ordinary skill in the art would have been motivated to modify the semiconductor device of Akira in view of Williams to arrive at the claimed invention. This rejection is respectfully traversed.

As previously discussed, the photoresist of Akira does not disclose a hard mask, as claimed. Furthermore, the Examiner's rejection of claim 4 is predicated upon Akira teaching a hard mask. As such, the Examiner's rejection of claim 4 fails because the Examiner has not established a motivation to replace the photoresist of Akira with the hard mask of Williams.

Claims 2 and 3 are rejected under 35 U.S.C. § 103 for obviousness predicated upon Yoshihiko in view of Tao

In the eleventh enumerated paragraph of the statement of the rejection, the Examiner concluded that one having ordinary skill in the art would have been motivated to modify the semiconductor device of Yoshihiko in view of Tao to arrive at the claimed invention. This rejection is respectfully traversed.

Claims 2 and 3 depend ultimately from independent claim 1, and Applicants incorporate herein the arguments previously advanced in traversing the imposed rejection of claim 1 under 35 U.S.C. § 102 for lack of novelty as evidenced by Yoshihiko. Specifically, the photoresist of Yoshihiko does not disclose the claimed hard mask. The Examiner's rejection of claims 2 and 3 is predicated upon Yoshihiko teaching a hard mask. As such, the Examiner's rejection of claims 2 and 3 fails because the Examiner has not established a motivation to replace the photoresist of Yoshihiko with the hard mask of Tao.

Claim 4 is rejected under 35 U.S.C. § 103 for obviousness predicated upon Yoshihiko in view of Williams

In the twelfth enumerated paragraph of the statement of the rejection, the Examiner concluded that one having ordinary skill in the art would have been motivated to modify the semiconductor device of Yoshihiko in view of Williams to arrive at the claimed invention. This rejection is respectfully traversed.

As previously discussed, the photoresist of Yoshihiko does not disclose a hard mask, as claimed. Furthermore, the Examiner's rejection of claim 4 is predicated upon Yoshihiko teaching a hard mask. As such, the Examiner's rejection of claim 4 fails because the Examiner has not established a motivation to replace the photoresist of Yoshihiko with the hard mask of Williams.

Claims 2 and 3 are rejected under 35 U.S.C. § 103 for obviousness predicated upon Schoenfeld in view of Tao

In the thirteenth enumerated paragraph of the statement of the rejection, the Examiner concluded that one having ordinary skill in the art would have been motivated to modify the semiconductor device of Schoenfeld in view of Tao to arrive at the claimed invention. This rejection is respectfully traversed.

Claims 2 and 3 depend ultimately from independent claim 1, and Applicants incorporate herein the arguments previously advanced in traversing the imposed rejection of claim 1 under 35 U.S.C. § 102 for lack of novelty as evidenced by Schoenfeld. Specifically, the mask of Schoenfeld does not disclose the claimed hard mask. The Examiner's rejection of claims 2 and 3 is predicated upon Schoenfeld teaching a hard mask. As such, the Examiner's rejection of claims 2 and 3 fails

because the Examiner has not established a motivation to replace the mask of Schoenfeld with the hard mask of Tao.

Claim 4 is rejected under 35 U.S.C. § 103 for obviousness predicated upon Schoenfeld in view of Williams

In the fourteenth enumerated paragraph of the statement of the rejection, the Examiner concluded that one having ordinary skill in the art would have been motivated to modify the semiconductor device of Schoenfeld in view of Williams to arrive at the claimed invention. This rejection is respectfully traversed.

As previously discussed, the mask of Schoenfeld does not disclose a hard mask, as claimed. Furthermore, the Examiner's rejection of claim 4 is predicated upon Schoenfeld teaching a hard mask. As such, the Examiner's rejection of claim 4 fails because the Examiner has not established a motivation to replace the mask of Schoenfeld with the hard mask of Williams.

Claims 2 and 3 are rejected under 35 U.S.C. § 103 for obviousness predicated upon Doan in view of Tao

In the fifteenth enumerated paragraph of the statement of the rejection, the Examiner concluded that one having ordinary skill in the art would have been motivated to modify the semiconductor device of Doan in view of Tao to arrive at the claimed invention. This rejection is respectfully traversed.

Claims 2 and 3 depend ultimately from independent claim 1, and Applicants incorporate herein the arguments previously advanced in traversing the imposed rejection of claim 1 under 35 U.S.C. § 102 for lack of novelty as evidenced by Doan. Specifically, the silicide of Doan does not disclose the claimed hard mask. The Examiner's rejection of claims 2 and 3 is predicated upon Doan teaching a hard mask. As such, the Examiner's rejection of claims 2 and 3 fails because the Examiner has not established a motivation to replace the silicide of Doan with the hard mask of Tao.

Claim 4 is rejected under 35 U.S.C. § 103 for obviousness predicated upon Doan in view of Williams

In the sixteenth enumerated paragraph of the statement of the rejection, the Examiner concluded that one having ordinary skill in the art would have been motivated to modify the semiconductor device of Doan in view of Williams to arrive at the claimed invention. This rejection is respectfully traversed.

As previously discussed, the photoresist of Doan does not disclose a hard mask, as claimed. Furthermore, the Examiner's rejection of claim 4 is predicated upon Doan teaching a hard mask. As such, the Examiner's rejection of claim 4 fails because the Examiner has not established a motivation to replace the silicide of Doan with the hard mask of Williams.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "Version with markings to show changes made."

Applicants have made every effort to present claims which distinguish over the prior art, and it is believed that all claims are in condition for allowance. However, Applicants invite the Examiner to call the undersigned if it is believed that a telephonic interview would expedite the prosecution of the application to an allowance. Accordingly, and in view of the foregoing remarks, Applicants hereby respectfully request reconsideration and prompt allowance of the pending claims.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417, and please credit any excess fees to such deposit account.

Respectfully submitted,

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Version with markings to show changes made

IN THE SPECIFICATION:

Page 21, first paragraph, please delete in its entirety and replace with the following:

--in the first etching. In the practice of the invention, it is permitted to form the anti-reflective film on the surface of a thin film material, i.e. on the surface of the metal material made thin in the first etching. Thus, according to the structure of the invention, high precision is ensured with respect to the shape of the thin film wiring.--

IN THE CLAIMS:

Please add new claim 17 as follows:

--17. (New) A semiconductor device according to claim 1, wherein the hard mask is resistant to heat at 400°C.--